

1. A substantially pure nucleic acid sequence encoding a serotonin-gated anion channel.

2. A substantially pure polypeptide, said polypeptide being a serotonin-gated anion channel.

5 3. The nucleic acid sequence of claim 1, wherein said serotonin-gated anion channel is a chloride channel.

4. The polypeptide sequence of claim 2, wherein said serotonin-gated anion channel is a chloride channel.

10 5. The nucleic acid sequence of claim 1, wherein said serotonin-gated anion channel is MOD-1.

6. The polypeptide sequence of claim 2, wherein said serotonin-gated anion channel is MOD-1.

7. An antibody that specifically binds to a serotonin-gated anion channel.

8. A *Caenorhabditis elegans* (*C. elegans*) strain having a mutant *mod-1* gene.

9. A method for identifying a compound that modulates the biological activity of a serotonin-gated anion channel, said method comprising the steps of:

(a) administering a test compound to a serotonin-gated anion channel;
and

5 (b) assaying a modulation in the biological activity of said serotonin-gated anion channel.

10. A diagnostic probe for detecting conditions associated with a serotonin-mediated cellular response, said probe comprising a means for measurement of a serotonin-gated anion channel.

10 11. A method for characterizing a drug associated with serotonin-mediated cellular response, said method comprising detecting a modulation in the activity of a serotonin-gated anion channel when said channel is exposed to said drug.

12. A method for decreasing serotonin-gated anion channel function, said method comprising administering an antisense RNA that decreases the level of a
15 serotonin-gated anion polypeptide.

13. A method for decreasing serotonin-gated anion channel function, said method comprising administering an antibody that binds to a serotonin-gated anion channel polypeptide.

14. A method for modulating serotonin-gated anion channel function, said method comprising administering a nucleic acid vector encoding a serotonin-gated anion channel, said administering being sufficient to modulate serotonin-gated anion channel activity.

5 15. A method for identifying a gene that is structurally related to a gene encoding a serotonin-gated anion channel, said method comprising identifying a gene with a probe derived from said serotonin-gated anion channel gene or a product encoded by said serotonin-gated anion channel gene.

16. An isolated gene identified by the method of claim 85.

10 17. A transgenic animal that over-expresses a serotonin-gated anion channel.

18. A transgenic animal that under-expresses a serotonin-gated anion channel.

19. A transgenic animal that expresses a dominant negative serotonin-gated anion channel.

20. A method for identifying a compound that modulates the activity of a serotonin-gated anion channel, said method comprising the steps of:

- (a) exposing a nematode to a test compound;
- (b) assaying the locomotion rate of said nematode; and
- 5 (c) comparing said locomotion rate to that of a control nematode receiving no test compound, wherein a modulation in said locomotion rate indicates a compound that modulates the activity of a serotonin-gated anion channel.

21. A method for identifying a compound that modulates the activity of a
10 serotonin-gated anion channel in a liquid locomotion assay, said method comprising the steps of:

- (a) exposing a nematode to a test compound;
- (b) quantifying the number of nematodes actively swimming after exposure to said test compound; and
- 15 (c) comparing the number of said actively swimming nematodes to that of control nematodes receiving no test compound, wherein a modulation in said number of actively swimming nematodes indicates a compound that modulates the activity of a serotonin-gated anion channel.

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